Claims

1. Process for manufacturing a Micro-Electro-Mechanical-System (MEMS) comprising the use of a sacrificial layer characterized by the fact that the sacrificial layer is made of silicon.

2. Process according to the previous claim wherein the silicon sacrificial layer is removed by plasma etching with fluorine-based chemistry.

3. Process according to claim 1 wherein the silicon sacrificial layer is removed by xenon difluoride (XeF_2) or bromine trifluoride (BrF_3) etching.

4. Process according to claim 1 wherein the silicon is in polycrystalline form.

5. Process according to claim 1 wherein the silicon is in amorphous form.

6. Process according to anyone of the previous claims characterized by the fact that it is used in surface micromachining.

7. Process according to anyone of the previous claims characterized by the fact that it is used for the manufacture of a MEMS containing a suspended metal layer.

8. MEMS device architecture obtained according to the process as defined in anyone of the previous claims.

9. MEMS device according to the previous claim to be fabricated on silicon, silicon-on-insulator substrates and on silicon with the underneath substrate etched.

10. MEMS device according to claim 8 or 10 characterized by the fact that it comprises a suspended metal gate.

11. MEMS device according to the previous claim characterized by the fact that it is a suspended gate MOSFET.

12. MEMS device according to claim 10 or 11 wherein said metal is aluminum, AlSi, AlSiCu, copper, gold, tungsten, platinum, titanium or a combination of these metals.

13. MEMS device architecture obtained according to the process as defined in anyone of the previous claims 1 to 7 and using two metal levels, one fixed and one movable, called membrane, both capped with one insulator, with variable air-gaps and an underlying insulator deposited on a semiconductor substrate.

14. MEMS device according to the previous claim characterized by the fact that it comprises a high-k dielectric made of TiO_2.

15. Use of the device of claim 10 as radiofrequency capacitive switch.

16. Use of the device of claim 10 as current switch.

17. Use of the device of claim 10 as radiofrequency tuneable capacitor.

18. Use of the device of claim 10 as magnetic field sensor.

19. Use of the device of claim 10 as accelerometer.

20. Use of the device of claim 10 as pressure sensor.